

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q79676

Yasumichi KUWAYAMA, et al.

Appln. No.: 10/775,203

Group Art Unit: 2831

Confirmation No.: 1641

Examiner: Chau N. NGUYEN

Filed: February 11, 2004

For: **STRUCTURE FOR WATERPROOFING TERMINAL-WIRE CONNECTING PORTION  
AND METHOD OF WATERPROOFING THE SAME**

**SUBMISSION OF APPEAL BRIEF**

**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of \$500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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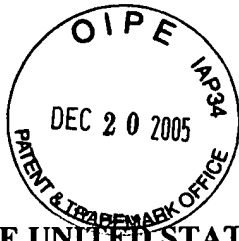
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WASHINGTON OFFICE

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**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents

P.O. Box 1450

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Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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SUGHRUE MION, PLLC Ref: Q79676

**I. REAL PARTY IN INTEREST**

The real party in interest in the assignee, Yazaki Corporation, by virtue of an Assignment recorded on January 17, 2002, at Reel 012528; Frame 0365, in parent Application Serial No. 10/046,710, now U.S. Patent No. 6,770,817.

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## **II. RELATED APPEALS AND INTERFERENCES**

There are no appeals or interferences known to Appellants, the Appellants' legal representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

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### **III. STATUS OF CLAIMS**

Claims 1, 2, 5, 6 and 9 are pending, are rejected and are the subject of this appeal.

Claims 3, 4, 7 and 8 have been cancelled and are not subject of this appeal.

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**IV. STATUS OF AMENDMENTS**

No amendments were made subsequent to the final rejection in the Office Action dated  
June 8, 2005.

**V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The present invention relates to a structure for water proofing a terminal-wire connecting portion and a related method of water proofing a terminal-wire connection portion. Figures 11A and 11B illustrate a conventional terminal-wire connecting portion and method. Page 1, lines 9 and 10. As shown in Figure 11A, a terminal 44 is connected to a wire 41 having a conductive portion 42 and an insulating sheath 43. Page 1, lines 11-17. The wire connection portion 45 includes press-clamping piece portions 48 which extend upwardly from opposite side edges of bottom plate portion 47. Page 2, lines 1-7. The conductor portion 42 of the wire is folded back into a generally U-shape at a distal end portion of the insulating sheath 43 and is disposed between the outer peripheral surface of the insulating sheath 43 and the bottom plate portion 47 of the terminal 44 and is pressed against the bottom plate portion 44 by a resilient force of the insulating sheet 43 when the press-clamping piece portion 48 has been pressed by a pair of upper and lower dies. Page 1, line 18 to page 2, line 2. However, with this arrangement, the conductor portion 42 is exposed at a front end 43a of the insulating sheet 43 which leads to oxidation of the exposed portion, page 3, line 12-15. Also, a water proof seal material 46 sometimes intrudes between the conductor portion 42 and the bottom plate 47 of the terminal 44 before the pressing operation thereby potentially interfering with the conducting performance. Page 3, line 23 to page 4, line 2.



The present invention aims to solve the above-problems. According to the claim 1, and with reference to Figures 1-5 which show one exemplary embodiment, there is provided a structure for waterproofing a terminal-wire connecting portion comprising:

a wire 2 including a conductor portion 3 and an insulating sheath 4; and

a terminal 1 including a substantially cylindrical wire connecting portion 5,

wherein the conductor portion and the insulating sheet are inserted in the wire connection portion 5, and the wire connection portion is pressed radially uniformly over an entire periphery of the wire connection portion 5 and over an entire length of the wire connection portion so that the conductor portion 3 and insulating sheath 4 are held in intimate contact with the inner peripheral surface of the wire connection portion 5, and

the diameter of the wire connection portion 5 is uniformly reduced over an entire periphery and an entire length of wire connection portion. Page 8, lines 6-15 and page 9, line 20 to page 10, line 17.

The invention is also directed to a method of water proofing a terminal-wire connecting portion comprising the steps of:

simultaneously inserted a conductor portion 3 and an insulating sheath 4 of a wire 2 into a substantially cylindrical wire connecting portion 5 of a terminal; and

pressing radially uniformly the wire connection portion 5 over an entire periphery, wherein the connection portion is compressively plastically deformed so that the diameter of the wire connection portion is uniformly reduced over an entire periphery and an entire length of the

wire connection portion. Id. Since the outer peripheral surface of the conductor portion 3 is held in intimate contact with the inner peripheral surface of the wire connection portion with no gap therebetween, oxidation is eliminated. Page 11, lines 3-12. Furthermore, the conductor portion 3 and the insulating sheath 4 can be simultaneously press-fastened and fixed to the terminal by a single pressing operation, so that the structure of the terminal is simplified and the pressing operation can be affected easily and sufficiently. Page 11, lines 17-20.

**VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

(1). Whether claims 1, 2, 5 and 6 are patentable under 35 U.S.C. § 103(a) as being obvious over Japanese Patent Publication No. 7-161392 (Kobayashi) in view of U.S. Patent Publication No. 2001/0016459 (Livshiz, et al.).

(2) Whether claim 9 is unpatentable under 35 U.S.C. § 103(a) as being obvious over Kobayashi in view of Livshiz, et al. and further in view of U.S. Patent No. 5,045,527 (Ikeno, et al.).

## **VII. ARGUMENT**

### **(1). The § 103 rejection of claims 1, 2, 5, and 6 is improper.**

Claims 1 and 5 are in independent form. In the rejection, the Examiner contends that claims 1, 2, 5 and 6 are unpatentable under § 103(a) as being unpatentable over Kobayashi in view of Livshiz, et al. The Examiner contends that Kobayashi teaches all of the features recited in independent claims 1 and 5, with the exception of the requirement that the wire connection portion be pressed radially uniformly over an entire periphery of the wire connection portion and over an entire length thereof such that the diameter is uniformly reduced over the entire periphery and length of the wire connection portion. To compensate for this deficiency, the Examiner contends that Livshiz, et al. discloses a wire connection portion 55 which is pressed radially over an entire periphery and over an entire length. The Examiner cites to paragraph 85 of Livshiz, et al. in support of this contention. Based on this, the Examiner contends “it would have been obvious to one skilled in the art to press the wire connection portion of Kobayashi over an entire periphery and an entire length as taught by Livshiz, et al. to ensure the connection between the wire and the connection portion.” Final Office Action, page 3.

Appellants respectfully submit that this rejection is improper for the following reasons. Appellants submit that there is not a combination of Kobayashi and Livshiz, et al. that would reasonably teach or suggest all of the claim recitations. For example, there is not a combination of Kobayashi and Livshiz, et al. that would reasonably teach or suggest the claimed structure and

method in which the diameter of the wire connection portion that is *uniformly* reduced over an entire periphery and an entire length of the wire connection portion.

The Examiner alleges that Kobayashi discloses a wire connection portion that is uniformly reduced over an entire length of the connection portion. In support of this, the Examiner refers to Fig. 1b of Kobayashi which shows arrows 16 extending in one dimension.

However, although Figure 1b of Kobayashi shows the wire connection being pressed radially in a single dimension, Kobayashi clearly does not disclose that a wire connection is *uniformly reduced* over an entire length of the connection portion. In fact, Kobayashi merely discloses the compression terminal 10 for the cable conductors pressed and connected to the cable conductor 3a by hydraulic pressing. Kobayashi at paragraph 11. Hydraulic pressing is generally used for connecting this kind of pressing machine. That is, the terminal pressing machine is a normal pressing machine which cannot uniformly compress the terminal so as to uniformly reduce the wire connection portion.

Furthermore, as noted above, the Examiner acknowledges Kobayashi does not disclose that the wire connection portion is pressed uniformly radially over both the entire periphery and an entire length of the wire connection portion. Therefore, the Examiner looks to Livshiz, et al. to compensate for this deficiency.

However, Livshiz, et al. merely discloses a cable lug 53 having a tubular portion 55 in which a cable 54 is received. The reference discloses that the cylindrical portion 55 of the cable lug 53 is positioned essentially entirely within lumen 50. A strong current is then rapidly

discharged through coil 56 and the pulse magnetic force which arises constricts the walls of the cylindrical portion 55 onto the end of the cable so that the two become joined to one another. See paragraph 85. Although not clear, it appears that the Examiner's position is that Livshiz, et al. discloses a structure in which the diameter of the wire connection portion is uniformly reduced over an entire periphery and an entire length of the wire connection portion. However, Appellants believe that the Examiner's position is based on a mischaracterization of Livshiz, et al. Specifically, the apparatus 40 of Livshiz, et al. cannot press the wire connection portion so that its diameter is uniformly reduced over an entire periphery and an entire length thereof because the shape of the forming coil 46 is not provided at a uniform distance around the assembly 52. Instead, the coil is U-shaped with a gap 2. See, Fig. 6. This non-uniform shape of the forming coil produces a *non-uniform* electrically generated compressing force. Accordingly, Appellants respectfully submits that the Examiner's rejection and independent claims 1 and 5 is improper.

It is apparent from the prosecution history that that the Examiner has ignored the requirement in these claims that the reduction in diameter connection portion be *uniform*. In particular, as to the Examiner's obviousness determination, the Examiner states as follows:

*It would have been obvious to one skilled in the art to press the wire connection portion of Kobayashi over an entire periphery and an entire length as taught by Livshiz et al. to ensure the connection between the wire and the connection portion.*

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As can be seen, the Examiner has failed to address the requirements in the claim that the diameter of the wire connection portion be *uniformly* reduced. Continuing with the Office Action, the Examiner next states:

*As disclosed by Livshiz, see the paragraph [0084] and [008]], the width of coil 46 determines the length of a workpiece, and the cylindrical portion 55 of cable lug 53 is entirely within lumen 50. Accordingly, Livshiz does disclose compressing a wire connection portion over an entire periphery and entire length.*

Again, it is respectfully submitted that the Examiner failed to consider the requirement in the claim that the diameter be reduced *uniformly* over the entire periphery and length of the wire connection portion. Since the Examiner has failed to consider this limitation, Appellants respectfully submit that the Examiner's rejection is improper on its face. Indeed, the Examiner has failed to respond to Appellants argument that the non-uniform shape of the forming coil in Livshiz, et al. produces a non-uniform electrically generated compressing force so that the diameter of the wire connection portion is not uniformly reduced over the entire periphery and the entire length.

For at least the above reasons, Appellants respectfully request that the rejection be reversed.

**(2.) The § 103 Rejection of Claim 9 is improper.**

The Examiner rejects claim 9 under § 103(a) as being unpatentable over Kobayashi and Livshiz, et al. as discussed above and further in view of Ikeno, et al. Appellants respectfully traverse this rejection because the references fail to teach or suggest all of the elements as set

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forth in claim 9. Indeed, it is respectfully submitted that Ikeno, et al. does not compensate for the deficiencies discussed above with respect to Kobayashi and Livshiz, et al.

### **VIII. CONCLUSION**

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
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**CLAIMS APPENDIX**

CLAIMS 1, 2, 5, 6, and 9 ON APPEAL:

1. A structure for waterproofing a terminal-wire connecting portion comprising:  
a wire including a conductor portion and an insulating sheath; and  
a terminal including a substantially cylindrical wire connection portion,  
wherein the conductor portion and the insulating sheath are inserted in the wire connection portion, and the wire connection portion is pressed radially uniformly over an entire periphery of the wire connection portion and over an entire length of the wire connection portion so that the conductor portion and the insulating sheath are held in intimate contact with an inner peripheral surface of the wire connection portion, and  
the diameter of the wire connection portion is uniformly reduced over an entire periphery and an entire length of the wire connection portion.
2. The structure according to claim 1, wherein  
the wire connection portion includes a smaller-diameter insertion hole for the conductor portion and a larger-diameter insertion hole for the insulating sheath, the smaller-diameter and larger-diameter insertion holes being disposed in coaxial relation to each other.
5. Method of waterproofing a terminal-wire connecting portion comprising the steps of:

simultaneously inserting a conductor portion and an insulating sheath of a wire into a substantially cylindrical wire connection portion of a terminal; and

pressing radially uniformly the wire connection portion over an entire periphery ;

wherein the wire connection portion is compressively plastically deformed so that the diameter of the wire connection portion is uniformly reduced over an entire periphery and an entire length of the wire connection portion.

6. The method according to claim 5, wherein  
the conductor portion is inserted into a smaller-diameter insertion hole formed in the wire connection portion,

the insulating sheath is inserted into a larger-diameter insertion hole formed in the wire connection portion in coaxial relation to the smaller-diameter insertion hole, and

the smaller-diameter and larger-diameter insertion holes are pressed radially.

9. The method according to claim 5, wherein the pressing is effected by a rotary swaging machine.